

Horses' cognitive faculties, and their practical consequences

Cognition is the manner in which an individual perceives and apprehends the world around him. Understanding how the horse analyses his environment enables us to better grasp his reactions in various situations.

By **Miléna TRÖSCH - Léa LANSADE** - | 02.05.2018 |

Technical level 



Permanent object test

What is cognition ?

Cognition is the way in which an individual perceives and comprehends the world around him. Studying cognition consists in analysing the different mechanisms enabling to acquire information on the outside world (through the 5 senses) and process this information, how the individual stores this information (i.e memory), and the manner in which the said information is used when the individual needs to make a decision when confronted with a problem (e.g the search for food).

Cognitive faculties are **extremely variable** from one animal species to another.

This field of biology - which uses different disciplines such as psychology, neuroscience or even ethology - was created in the 1980s and is currently in full growth, with cognitive faculties of more and more different animal species being studied.

Why study equine cognition ?

Studying equine cognition enables us to better understand how horses apprehend the world around them, and thus helps us :

- **Identify potential stressful sources ;**
- **Take into account these sources of stress** so as to adapt the way we raise them and how we can improve their well-being.

Moreover, better understanding of equine cognition is also important when **riding**. Indeed, when the horse is incapable of understanding what the rider expects of him, it will impede any progress in performance. Or worse, the horse may develop all sorts of defenses (biting, kicking, bucking and other sorts of attempts to get rid of his rider...) which could render him dangerous to the rider. Through the study of equine cognition, it becomes possible to **suggest learning and training methods which respect the cognitive particularities of the horse**. These studies can then be used to guide in the practice of equestrian activities.

Example of a study on equine cognition : the permanent object test

What is object permanency?

What do animals know of the objects around them ? Do they consider them as distinct entities which continue to exist even when they are not within their range of vision ? These are fundamental questions when trying to understand how a species apprehends the world around him.

It is the faculty to reason about hidden objects that we call permanency of the object. This cognitive faculty can be divided into 6 stages of varying complexity. These stages are equivalent to those of a child's developing cognitive faculties up to the age of two. In an experiment carried out at the INRA Nouzilly, and financed by the IFCE (French institute for horses and equestrianism), horses were tested to determine whether they could master the three more complex stages :

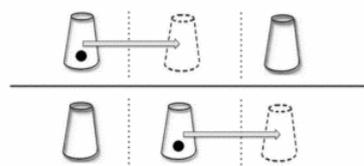
- Stage 4 : To reach stage 4 the horse must be able **to find an object hidden** in front of him, for example in a box, or as in our test, under a plastic mug. A child reaches this stage at around 4 months old.
- Stage 5 : To reach stage 5, the horse must be able **to avoid what we call perseverance mistakes**. This is when an object is hidden in the same place (place A) several times, and then placed in a second place (place B), he will tend to keep looking in place A, even if he saw the object being hidden in place B. A child only avoids the mistake, and reaches stage 5 at around 12 months old.
- Stage 6 : This stage is about **understanding invisible movements** : an object is moved around while hidden and the horse should then try to mentally assess how it moved, and deduce the final position. A child reaches this stage at around 2 years old.

How does the horse fare ?

In this experiment, a food reward was placed under one of two or three plastic mugs, so as to test whether horses could master these different stages. The horse had to choose the right plastic mug (the one hiding the reward) and tip it up with his nose to get to the reward and eat it.



Object permanency test



How the test is carried out



Reward in the plastic mug.

- To test stage 4, the reward was placed under one of two or three plastic mugs.
- To test stage 5, the reward was placed under mug A three times, then once under mug B.
- To test stage 6, the reward was placed under one of two mugs and then the mug (with the reward under it) was moved.

The horse couldn't use his sense of smell to find the reward, as the other mug(s) had an identical reward stuck to the bottom of the mug so that there was no difference in smell between them.

Our results showed that horses were capable of finding the hidden reward (stage 4). They did not commit the perseverance mistake (stage 5). On the other hand, our test subjects did not manage to reach stage 6.

These results situate the horse's cognitive faculties at the same level as those of most other animals tested (such as dogs, cats, chicks and even crows or parrots). In fact, in most non-human animals, stage 6 has only been reliably reached by the great apes.

However horses probably use alternative strategies to solve invisible movement. A great number of these movements give off other indications : they can use their other senses, like hearing or sense of smell. In addition, the object or individual that moves out of sight generally reappears close to the place where it was last seen. Horses can use this information to guess where the object or other horse will reappear. Nevertheless, these results clearly prove that horses do not think things through the way we do with regard to hidden objects.

Using the results in practice : thinking like a horse

As our results show, horses do not understand their environment in the way we do. More specifically they cannot predict the path that an object will take if it is invisible to them. Thus the outside world appears more unpredictable to them than we can imagine. For example, a horse may be startled by the reappearance of an object or person that was out of their sight. It is therefore very important to warn the horse with your voice in these situations, to avoid reactions of fear which could cause accidents. In the same way, this could also explain why a lot of horses get panicky if another horse moves out of their sight.

About our writers

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